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A Critical Assessment of Ontario Public Health Investigations of IPAC Lapses in Dentistry

John Hardie, BDS, MSc, PhD, FRCDC

Introduction

With seemingly increasing frequency since 2015, Public Health Units throughout Ontario have been conducting SWAT-like invasions of dental offices to enforce infection prevention and control (IPAC). Any assessment of the effectiveness of such intrusions must address two issues. One, the validity of infection prevention and control check lists used to judge a dental practice. Two, the experience, training and impartiality of the public health officials conducting the investigations. Prior to considering these, a brief historical perspective is justified.

History

The 2003 outbreak of severe respiratory distress syndrome (SARS) lead to the realization that there was no standardized approach to IPAC in Ontario among the various health units, and that the training and knowledge of IPAC officials was insufficient. As a consequence of these deficiencies, in 2004 the Ministry of Health and Long Term Care established the Provincial Infectious Diseases Advisory Committee which produced several “best practice” documents on IPAC principally for acute and long term care facilities. (1, 2)

In May 2011 Ottawa Public Health (OPH) investigated the possible transmission of HIV, HBV and HCV from an “out of hospital” endoscopy clinic having significant deficiencies in the cleaning and disinfection of endoscopes. The investigation was extended to notify clinic patients of the potential for such transmissions. OPH undertook this task somewhat reluctantly since, in 2011, it did not have a clear mandate, legal framework or financial resources to conduct such a wide ranging public health investigation. (1, 2)

A significant outcome of the “out of hospital” focus of this investigation was that in 2015 public health units were mandated to respond to IPAC complaints not only in hospitals and long term care units but in all facilities utilizing regulated health professionals including dental offices. Accordingly, public health unit investigations of Ontario dental practices began in 2015. (1, 2)

Any historical perspective relating to dental IPAC must include the following details.

- Prior to 2015 and up to the present there have been no reported cases of HIV, HBV or HCV being transmitted in Canadian dental practices. (3)
- A 44 year investigation(1946-1990) before the present era of infection control failed to find a single case of cross contamination from dental instruments.(4)
- A 2010 extensive review in the UK found no evidence of dental devices causing infections. (5)

- A 2013 report supposedly confirming the transmission of HCV in an oral surgery office must be tempered by the realization that a new experimental genetic sequencing technique was used to make that assumption, plus the investigators admitted that possible routes of transmission were based on pure speculation. (6)
- A 2016 US investigation which covered a 12 year span found not a single case of HIV transmission linked to dental treatment, and failed to clinically substantiate that the presumptive transmission of HBV and HCV in dentistry was due to inadequate infection control. (7)
- A 2018 investigation of the suspected transmission of bacterial endocarditis in an oral surgery practice which did not follow many recommended infection control such as having an office IPAC manual, adequately trained staff, authorized decontamination procedures and approved environmental cleaning methods. Despite these deficiencies, the transmission of bacterial endocarditis did not occur when oral surgery was performed with local anaesthetics but without intravenous sedation. It was concluded that the transmissions were likely related to the inadequate preparation, storage and use of intravenous medications. (8)

This historical review indicates that the transmission of HIV, HBV and HCV from a dental practice- even from one not following all IPAC recommendations- is an unlikely probability.

The Questionable Validity of IPAC Checklist for Dental Practice

A significant purpose of the checklist is to help guide public health units in conducting investigations related to infection prevention and control in dental practices.

Infection prevention and control is meant to prevent and/or control dentally acquired infections, sometimes referred to as nosocomial infections of dental origin. Such infections are ones not present nor incubating at the start of dental treatment, but whose cause is attributable to some aspect of the dental treatment. This means that to be effective the IPAC Checklist must be based on thorough clinical investigations of what causes dental nosocomial infections and equally sound clinically documented evidence of procedures that prevent such infections.

In 2008, Philip Riley, Administrator of the Cochrane Collaboration: Oral Health Group (the preeminent centre for evidence –based dentistry) indicated in a personal communication to the author that the low level of frequency of infections transmitted during dental treatment prevented any meaningful study of dentally acquired infections. The subsequent years have not altered that conclusion. Why is there a paucity of nosocomial infections of dental origin?

The official Ontario government document, "*Best Practices for Cleaning, Disinfection and Sterilization in All Health Care Facilities*" states that, "Low-level disinfection eliminates vegetative (live) bacteria, some fungi and enveloped viruses." (9) The microbes of low pathogenicity which inhabit the non-sterile oral cavity permit oral surgery to be performed with

minimal postoperative complications, and allow common social functions such as speaking, eating and eating- out to be regular non- threatening aspects of daily living. Low level disinfectants deactivate oral commensals resulting in few, if any, cross transmissions. As enveloped viruses, HIV, HBV and HCV are also deactivated by such disinfectants. Therefore, it is unlikely that these relatively fragile microorganism would remain pathogenic following physical cleaning, immersion in low level disinfectants and the harsh environments of sterilizers no matter how inadequate were these reprocessing techniques.

It is suggested that these facts contribute to the low frequency of dentally acquired infections. The dearth of such infections means that there are no adequate clinically based studies on which to formulate sound, practical, and cost effective dental IPAC procedures. The Ontario government document, "*Best Practices for Infection Prevention and Control*" emphasizes that the core elements or indicators appearing in IPAC checklists must be, "based on validated evidence that has been demonstrated to improve outcomes." (10) The dental checklist contains approximately 100 such indicators that are used to assess compliance with IPAC recommendations. In which Ontario dental practice has there been a failure to follow a specific checklist indicator resulting in a clinically diagnosed dentally acquired infection which was subsequently prevented by adoption of the indicator? The author is unaware of any such findings. In other words, the checklist has not been validated as there is no evidence that complying with it will reduce the already established low frequency of dentally acquired infections. Quite simply, the checklist has never been tested to show that it does prevent or control dentally acquired infections.

The historical rarity of dental acquired infections places a reliance on theoretical assumptions in formulating the dental IPAC checklist. In the hierarchical system of evidence-based care the weakest level of evidence is that derived from such assumptions even if made by so called respected authorities. Without clinical evidence showing that the checklist is both necessary and effective, it lacks credibility.

Any meaningful public health investigation must accept the questionable validity of the IPAC checklist for dental practice.

Public Health Investigations of IPAC Complaints

As indicated above, since 2015 the "*Infection Prevention and Complaint Protocol*" mandates Ontario's 35 public health units to investigate complaints relating to IPAC. (11) The investigation is usually conducted by a public health inspector and/or nurse utilizing checklists applicable to the particular facility being inspected. The most significant finding from such investigations is the presence of an IPAC lapse. This is defined as, "failure to follow IPAC practices resulting in a risk of transmission of infectious diseases to clients, attendees or staff through exposure to blood, body fluids, secretions, excretions, mucous membranes, non-intact skin, or contaminated equipment and soiled items." (11) The risk is assessed on the probability of an infection occurring. As discussed above that probability is highly unlikely in dentistry.

According to the *Infection Prevention and Control Disclosure Protocol* if an IPAC lapse is identified in a dental office, the name and the location of the practice plus the specific nature of the lapse will be posted on the public health unit's website. (12) If the practitioner does not implement recommended corrective actions within an agreed upon timeframe, a medical officer of health or a public health inspector under the *Health Protection and Promotion Act* has the right to issue a section 13 order effectively closing the practice until the public health authorities are satisfied that their recommended corrective actions have been enacted. (13) In addition, their interpretation of the IPAC lapse and the risk it imposes, allows public health officials to notify patients of this risk and the advisability of being tested for HIV, HBV and HCV.

Identifying an alleged professional misconduct on a public website, the ability to close down an established practice for an indefinite period, and the capability of requesting patients undergo emotionally and physically taxing tests, are powers which have the potential of destroying well deserved and highly esteemed professional reputations. Therefore, it is absolutely essential that the public health units wielding such authority do so with the utmost appropriate knowledge, training and integrity. Is this the case?

An article titled, "Public health investigation of infection prevention and control complaints in Ontario, 2015-2018" was published in November, 2019. (2) It was based on public health units being surveyed -using closed and open ended questions- on their experiences of, and challenges associated with, addressing IPAC complaints. The complaints were from a variety of settings including nail salons, barber shops, tattoo parlours as well as facilities with regulated health professionals such as nurses, physicians and dentists. Twenty one of the thirty five public health units (60% response rate) participated in the survey. Significant findings were as follows.

- The majority of complaint investigations did not result in the identification of an IPAC lapse.
- Only 2.8% (15 of 538) IPAC lapses were deemed to be of sufficient risk to justify individual patient notification and testing.
- Of these only 0.7% (4 of 538) were suspicious for possible HBV or HCV transmission.
- There were **no** suspected HIV transmissions among the 538 lapses.
- The most common complaints related to; dirty equipment, poor environmental cleaning and inappropriate hand hygiene.
- The common deviations from checklists during complaint investigations were, incorrect reprocessing of equipment and non-existent IPAC policies and procedures.
- The major reasons justifying an IPAC lapse were related to; reprocessing of reusable equipment, use of multi-dose vials or solutions, and personal protective equipment.

These findings are significant because they are based on the questionable validity of checklists. For example, there are no definitive clinical studies which have identified poor environmental cleaning of dental offices or the inappropriate wearing of gowns, gloves and masks by dental staff as contributors to nosocomial infections of dental origin.

Perhaps the more damning findings of the survey were the following.

- A lack of appropriate training and experience among public health staff.
- Increased costs and workloads associated with addressing IPAC complaints.
- Inconsistencies in IPAC complaint investigations between public health staff in different geographic locations.
- A lack of guidance on how to conduct IPAC complaint investigations and the disclosure of IPAC lapses.
- Questions regarding the role and/or support of professional regulatory colleges in IPAC investigations.
- Properly identifying the magnitude of a risk associated with an IPAC lapse.
- The potential for legal challenges when Provincial Medical Officers for Health disagree with risk assessments performed by Public Health Ontario.
- Concerns regarding the timing of media releases, how they should be worded and how much detail they should contain.

The authors of the survey are of the opinion that, "Our survey highlights that lack of training/expertise, increased workload, interjurisdictional inconsistencies and lack of clear guidance are important challenges that public health units face when investigating IPAC complaints." (2)

Discussion

The fact that the core elements of the Dental IPAC Checklist have not been validated as to improving outcomes i.e. preventing and/or controlling dentally acquired infections, means that there is not a reliable yardstick against which to credibly assess the IPAC procedures of a dental practice.

The author is acutely aware of inconsistences in how public health units investigated IPAC complaints of dental offices. The following are illustrative examples.

- An IPAC investigation revealed inadequate training of staff, insufficient space for reprocessing of equipment, and improper use of biologic indicators. It was deemed that while an IPAC lapse existed there was no risk to the public and no need for patient notification.
- Another IPAC investigation in a different health unit identified similar infection control deficiencies but concluded that the risk was such that a section 13 order was imposed and that patients should be tested for HIV, HBV and HCV.
- At least two dental practices where patients have been notified to have HIV tests, yet not one of the 21 health units participating in the survey felt that IPAC investigations justified such an action.
- An IPAC investigation resulting in a section 13 order which was not based on a complaint but on a simple question relating to the sterility status of dental instruments.

- The suspicion that a public health official overruled a risk assessment of a dental IPAC lapse made by Ontario Public Health which did not warrant patient notification in favour of recommending patients be tested for HIV, HBV and HCV.

Public health units must address the challenges imposed by the lack of a credible dental IPAC checklist and those identified in the recent survey of their IPAC complaint investigations. Dentists, their staff and their patients should be made aware of these challenges. In addition, they and the general public must appreciate that the very existence of these challenges questions the credibility of all past dental IPAC investigations.

Overcoming these challenges demands that government and professional regulatory agencies recognize that dentistry does not have a history of creating nosocomial infections. This realization should drive the development of practical, simple, cost effective infection control recommendations. If this does not occur, there is every likelihood that dental infection control will continue to spiral into an ever increasing series of unsubstantiated recommendations based on whims and opinions.

While it is unlikely that IPAC complaint investigations of dental practices will cease, this assessment has shown that past investigations were based on an imperfect process, and that future ones should be guided by the historical evidence that the transmission of HIV, HBV and HCV from a dental office is an unlikely probability.

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